

DRAFT RULEMAKING SHADING LEGEND

- * Shaded text - Rule sections or subsections not suggested for revision. This text is only for reference.
- * Unshaded Text - Rule sections or subsections that are suggested for revision.
- * Boldface Text – Suggested language additions.
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10 CSR 10-6.390 Control of NO_x Emissions From Large Stationary Internal Combustion Engines.

Purpose: The purpose of this regulation is to reduce emissions of NO_x to ensure compliance with the federal NO_x control plan. This rulemaking will establish emission levels for large stationary internal combustion engines.

- (1) Applicability.
 - (A) This rule applies to any large stationary internal combustion engine, greater than one thousand three hundred (1,300) horsepower that—
 - 1. Emitted greater than one (1) ton per day of NO_x on average during the period from May 1 through September 30 of 1995, 1996, or 1997; or
 - 2. Begins operation after September 30, 1997.
 - (B) Exemptions.
 - 1. Any source meeting the applicability requirements of section (1)(A) of this rule which has an approved NO_x budget opt-in permit under 10 CSR 10-6.350 is exempt from this rule.
 - 2. Any stationary internal combustion engine that meets the definition of emergency standby engine in subsection (2)(D) of this rule is exempt from this rule.
 - 3. The requirements of sections (3) and (4) of this rule shall not apply to the following operating conditions:
 - A. Start-up and shut-down periods and periods of malfunctions, not to exceed thirty six (36) consecutive hours; or
 - B. Regularly scheduled maintenance activities.
- (2) Definitions.
 - (A) Diesel engine – a compression ignited (CI) two- or four- stroke engine in which liquid fuel is injected into the combustion chamber and ignited when the air charge has been compressed to a temperature sufficiently high for auto-ignition.
 - (B) Dual fuel engine – compression ignited stationary internal combustion engine that is capable of burning liquid fuel and gaseous fuel simultaneously.
 - (C) Emergency standby engine – an internal combustion engine used only when normal electrical power or natural gas service is interrupted, or for the emergency

pumping of water for either fire protection or flood relief. An emergency standby engine may not be operated to supplement a primary power source when the load capacity or rating of the primary power source has been either reached or exceeded.

- (D) Engine rating – the output of an engine as determined by the engine manufacturer and listed on the nameplate of the unit, regardless of any derating.
- (E) Higher Heating Value (HHV) – the total heat liberated per mass of fuel burned in British thermal units (BTU) per pound, when fuel and dry air at standard conditions undergo complete combustion and all resultant products are brought to their standard states at standard conditions. If certification of the HHV is not provided by the third party fuel supplier, it shall be determined by one of the following test methods: ASTM D2015-85 for solid fuels; ASTM D240-87 or ASTM D2382-88 for liquid hydrocarbon fuels; or ASTM D1826-88 or ASTM D1945-81 in conjunction with ASTM D3588-89 for gaseous fuels. These methods are all incorporated by reference as specified at 40 CFR 52.3002.
- (F) Lean-burn engine – any two- or four- stroke spark ignited (SI) engine with greater than four percent (4%) oxygen in the engine exhaust.
- (G) Maintenance operation – normal routine maintenance on any stationary internal combustion engine subject to this rule or the use of an emergency standby engine and fuel system during testing, repair and routine maintenance to verify its readiness for emergency standby use.
- (H) Output – the shaft work output from any engine plus the energy reclaimed by any useful heat recovery system.
- (I) Peak load – the maximum instantaneous operating load.
- (J) Permitted capacity factor – the annual permitted fuel use divided by the manufacturers specified maximum fuel consumption times eight thousand seven hundred sixty (8,760) hours per year.
- (K) Rich-burn engine – a two- or four- stroke SI engine where the oxygen content in the exhaust stream before any dilution is one percent (1%) or less measured on a dry basis.
- (L) Stationary internal combustion engine – internal combustion engine of the reciprocating type that is either attached to a foundation at a facility or is designed to be capable of being carried or moved from one location to another and remains at a single site at a building, structure, facility, or installation for more than twelve (12) consecutive months. Any engine or engines that replace an engine at a site that is intended to perform the same or similar function as the engine replaced is included in calculating the consecutive time period. Nonroad engines and engines used solely for competition are not stationary internal combustion engines.
- (M) Stoichiometric air/fuel ratio – the air/fuel ratio where all fuel and all oxygen in the air/fuel mixture will be consumed.
- (N) Utilization Rate – the amount of an engine's capacity reported in horsepower-hours that is utilized.
- (O) Unit – any diesel, lean-burn, or rich-burn stationary internal combustion engine as defined in this section.
- (P) Definitions of certain terms used in this rule, other than those specified in this rule, may be found in 10 CSR 10-6.020.

(3) General Provisions.

- (A) An owner or operator of a large stationary internal combustion engine meeting the applicability of paragraph (1)(A)1. of this rule shall calculate the allowable NO_x emission rate for each applicable engines using:

$$ER = \text{NO}_{x_{\text{act}}} / \text{UR} \times 1.102 \times 10^{-6} \times 0.1$$

where:

ER = the allowable emission rate for each engine in grams per horsepower-hour;
NO_{x_{act}} = the highest actual NO_x emissions, reported in tons per control period, for the period from May 1 through September 30 for the one of the years 1995, 1996, or 1997 based on the best available emission information for each engine; and
UR = the utilization rate in horsepower-hours during the same period as NO_{x_{act}}

- (B) An owner or operator of a large stationary internal combustion engine meeting the applicability of paragraph (1)(A)2. of this rule shall not operate an engine to exceed the permitted emission rate or the following emission rate, whichever is more stringent:

1. For rich-burn SI engines 3.0 grams per horsepower-hour
2. For lean-burn SI engines 3.0 grams per horsepower-hour
3. For diesel CI engines 8.3 grams per horsepower-hour
4. For dual fuel engines 4.3 grams per horsepower-hour

- (C) An owner or operator of a large stationary internal combustion engine may choose to establish a facility-wide NO_x emissions cap in lieu of compliance with subsection (3)(A) of this rule. If the owner or operator elects to comply with the requirements of subsection (3)(A), the owner or operator shall submit a commitment in writing no later than May 1, 2005, to the director stating the intent to comply with that subsection. If the owner or operator commits to comply with this subsection rather than subsection (3)(A) of this rule, the owner or operator shall submit the following to the director:

1. The facility-wide NO_x emissions from the year of data that would be used in paragraph (3)(A)1. of this rule. on a unit by unit basis;
2. The number of tons of NO_x emission reductions that would be required in paragraph (3)(A)1. of this rule on a unit by unit basis;
3. A detailed inventory of all engines being used to comply with the NO_x emission cap including the:
 - A. Uncontrolled emission rate of all engines at the facility;
 - B. Controlled emission rate for all engines being controlled under the NO_x emissions cap;
 - C. Capacity of each engine at the facility; and
 - D. Utilization rate of each engine at the facility; and
4. The controlled NO_x emissions from the facility during the control period, May 1 through September 30.

- (D) To meet the requirements of subsection (3)(A) or (3)(B) of this rule, the owner or operator may take into account as a portion of the required NO_x reductions, physical and quantifiable measures to increase energy efficiency, reduce energy demand, or increase use of renewable fuels.

- (E) Monitoring Requirements

1. Any owner or operator meeting the applicability of section (1) of this rule shall not operate such equipment unless it is equipped with one of the following:
 - A. A CEMS, which meets the applicable requirements of 40 CFR part 60, subpart A, appendix B, and complies with the quality assurance procedures specified in 40 CFR part 60, appendix F. The CEMS shall be used to demonstrate compliance with the applicable emission limit; or
 - B. A calculational and record keeping procedure based upon actual NO_x emissions testing and correlations with operating parameters. The installation, implementation and use of such an alternate calculational and record keeping procedure must be approved by the director in writing prior to implementation.
2. The CEMS or approved alternate monitoring procedure shall be operated and maintained in accordance with an on-site CEMS or alternate monitoring plan approved by the director.

(4) Reporting and Record Keeping.

(A) Reporting Requirements. The owner or operator subject to of this rule shall comply with the following requirements:

1. The owner or operator shall submit to the director the identification number and type of each unit subject to this rule, the name and address of the plant where the unit is located, and the name and telephone number of the person responsible for demonstrating compliance with this rule before May 1, 2007.
2. The owner or operator shall submit an annual report documenting for each controlled unit the total NO_x emissions from May 1 through September 30 of each year to the director by November 1 of that year, beginning in 2007.
3. The owner or operator of a unit subject to this rule and operating a continuous emissions monitoring system (CEMS) shall submit an excess emissions monitoring systems performance report, in accordance with the requirements of 40 CFR 60.7(c) and 60.13.

(B) Record Keeping Requirements. Any owner or operator of a unit subject to this rule shall maintain all records necessary to demonstrate compliance with this rule for a period of five (5) years at the plant at which the subject unit is located. The records shall be made available to the director upon request. The owner or operator shall maintain records of the following information for each day of the control period the unit is operated:

1. The identification number of each unit and the name and address of the plant where the unit is located for each unit subject to the requirements of this rule;
2. The calendar date of record;
3. The number of hours the unit is operated during each day including startups, shutdowns, malfunctions, and the type and duration of maintenance and repair;
4. The date and results of each emissions inspection;

5. A summary of any emissions corrective maintenance taken;
6. The results of all compliance tests; and
7. If a unit is equipped with a CEMS:
 - A. The identification of time periods during which NO_x standards are exceeded, the reason for the exceedance, and action taken to correct the exceedance and to prevent similar future exceedances; and
 - B. The identification of the time periods for which operating conditions and pollutant data were not obtained including reasons for not obtaining sufficient data and a description of corrective actions taken.

(5) Test Methods. *(Not Applicable)*